FIG. 1

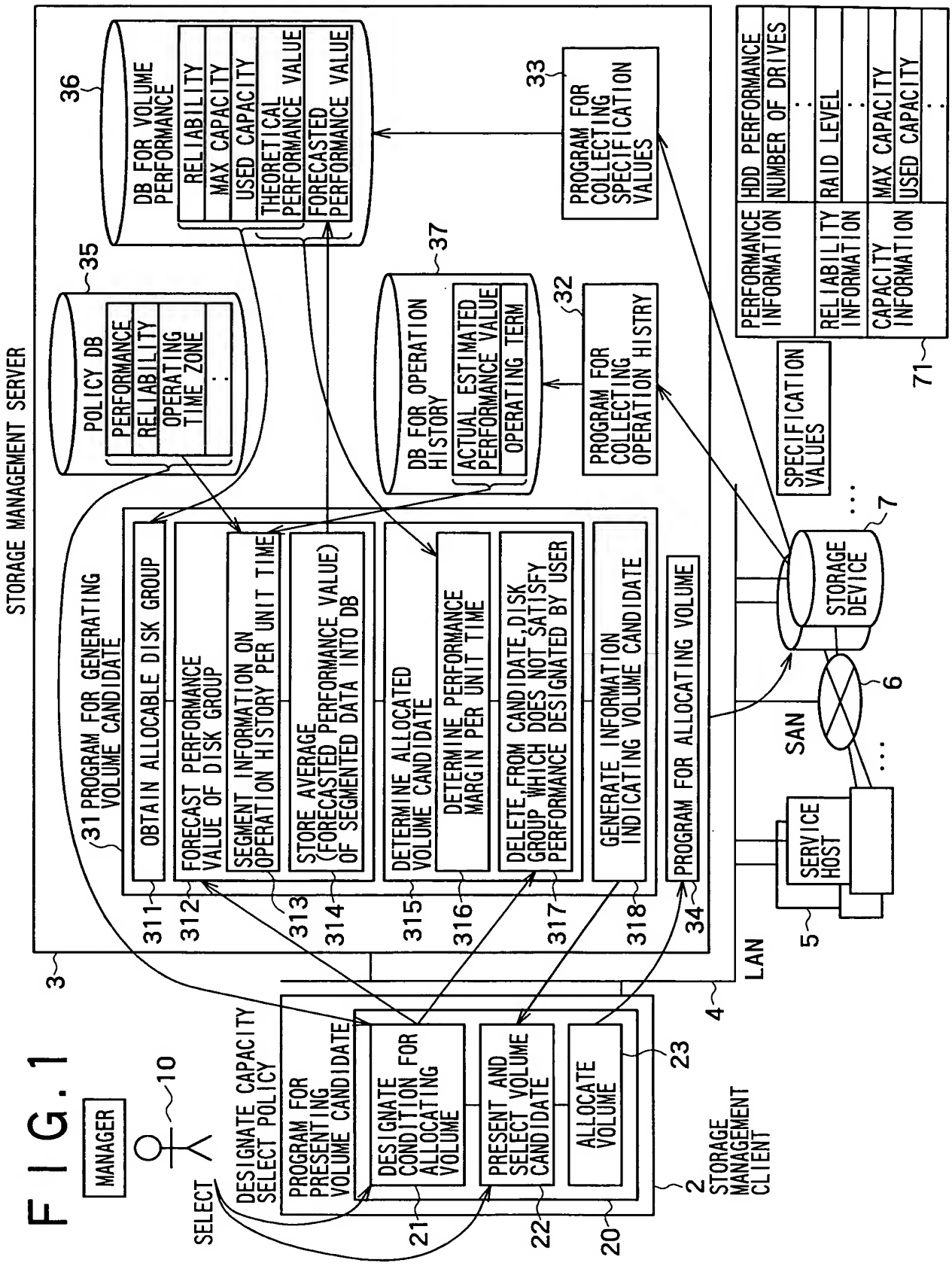

MANAGER
10
SELECT
DESIGNATE CAPACITY
SELECT POLICY
STORAGE MANAGEMENT SERVER
3
PROGRAM FOR GENERATING VOLUME CANDIDATE
31
OBTAIN ALLOCABLE DISK GROUP
FORECAST PERFORMANCE VALUE OF DISK GROUP
SEGMENT INFORMATION ON OPERATION HISTORY PER UNIT TIME
STORE AVERAGE (FORECASTED PERFORMANCE VALUE) OF SEGMENTED DATA INTO DB
DETERMINE ALLOCATED VOLUME CANDIDATE
DETERMINE PERFORMANCE MARGIN PER UNIT TIME
DELETE FROM CANDIDATE DISK GROUP WHICH DOES NOT SATISFY PERFORMANCE DESIGNATED BY USER
GENERATE INFORMATION INDICATING VOLUME CANDIDATE
311
312
313
314
315
316
317
318
PROGRAM FOR ALLOCATING VOLUME
34
POLICY DB
PERFORMANCE
RELIABILITY
OPERATING TIME ZONE
35
DB FOR VOLUME PERFORMANCE
RELIABILITY
MAX CAPACITY
USED CAPACITY
THEORETICAL PERFORMANCE VALUE
FORECASTED PERFORMANCE VALUE
36
DB FOR OPERATION HISTORY
ACTUAL ESTIMATED PERFORMANCE VALUE
OPERATING TERM
37
PROGRAM FOR COLLECTING OPERATION HISTRY
32
PROGRAM FOR COLLECTING SPECIFICATION VALUES
33
SPECIFICATION VALUES
PERFORMANCE INFORMATION
HDD PERFORMANCE
NUMBER OF DRIVES
RELIABILITY INFORMATION
RAID LEVEL
CAPACITY INFORMATION
MAX CAPACITY
USED CAPACITY
71
LAN
4
SAN
6
STORAGE DEVICE
7
SERVICE HOST
5
STORAGE MANAGEMENT CLIENT
2
PROGRAM FOR PRESENTING VOLUME CANDIDATE
DESIGNATE CONDITION FOR ALLOCATING VOLUME
PRESENT AND SELECT VOLUME CANDIDATE
ALLOCATE VOLUME
21
22
20
23

FIG.2

35

351 POLICY NAME	PEAK PERFOMANCE		LOWEST SECURITY PERFORMANCE		354 RELIABILITY	OPERATING TIME ZONE				356 ARRANGEMENT POLICY
	3521 READ PERFORMANCE	3522 WRITE PERFORMANCE	3531 READ PERFORMANCE	3532 WRITE PERFORMANCE		3551 TIME	3552 DAY	355 WEEK	3553 MONTH	3554
357 WEEKDAY SERVICE	50MB/s	10MB/s	10MB/s	10MB/s	mid	—	—	MON TO FRI	—	DISTRIBUTE
358 NO-SERVICE DAY BACK-UP	25MB/s	25MB/s	5MB/s	5MB/s	low	—	—	SAT AND SUN	—	CONCENTRATE
359 ACCOUNTING MONTH	20MB/s	50MB/s	0MB/s	0MB/s	high	0:00~05:00	20~30	—	3.9	DISTRIBUTE

FIG.3

36

361 DISK GROUP NAME	362 RELIABLITY	363 CAPACITY		364 THEORETICAL PERFORMANCE VALUE		365 FORECASTED PERFORMANCE VALUE		
		3631 MAX CAPACITY	3632 USED CAPACITY	3641 READ PERFORMANCE	3642 WRITE PERFORMANCE	3651 UNIT TIME	3652 READ PERFORMANCE	3653 WRITE PERFORMANCE
366 DISK 1	mid	400GB	210GB	150MB/s	150MB/s	MON	80MB/s	50MB/s
						TUE	60MB/s	40MB/s
						WED	76MB/s	52MB/s
						THU	72MB/s	65MB/s
						FRI	92MB/s	65MB/s
						SAT	100MB/s	120MB/s
						SUN	95MB/s	110MB/s
367 DISK 2	high	300GB	160GB	120MB/s	120MB/s	MON	69MB/s	50MB/s
						TUE	52MB/s	20MB/s
						WED	40MB/s	25MB/s
						THU	48MB/s	23MB/s
						FRI	75MB/s	52MB/s
						SAT	100MB/s	120MB/s
						SUN	80MB/s	75MB/s

FIG. 4

37

371 DISK GROUP NAME	372 ACTUAL ESTIMATED PERFORMANCE VALUE		
	3721 TIME	READ PERFORMANCE	3723 WRITE PERFORMANCE
373 DISK 1	2003/2/15 5:00	78MB/s	51MB/s
	2003/2/15 6:00	78MB/s	51MB/s
	:	:	:
374 DISK 2	2003/4/1 0:00	25MB/s	18MB/s
	2003/4/1 1:00	20MB/s	22MB/s
	:	:	:

3722

FIG.5

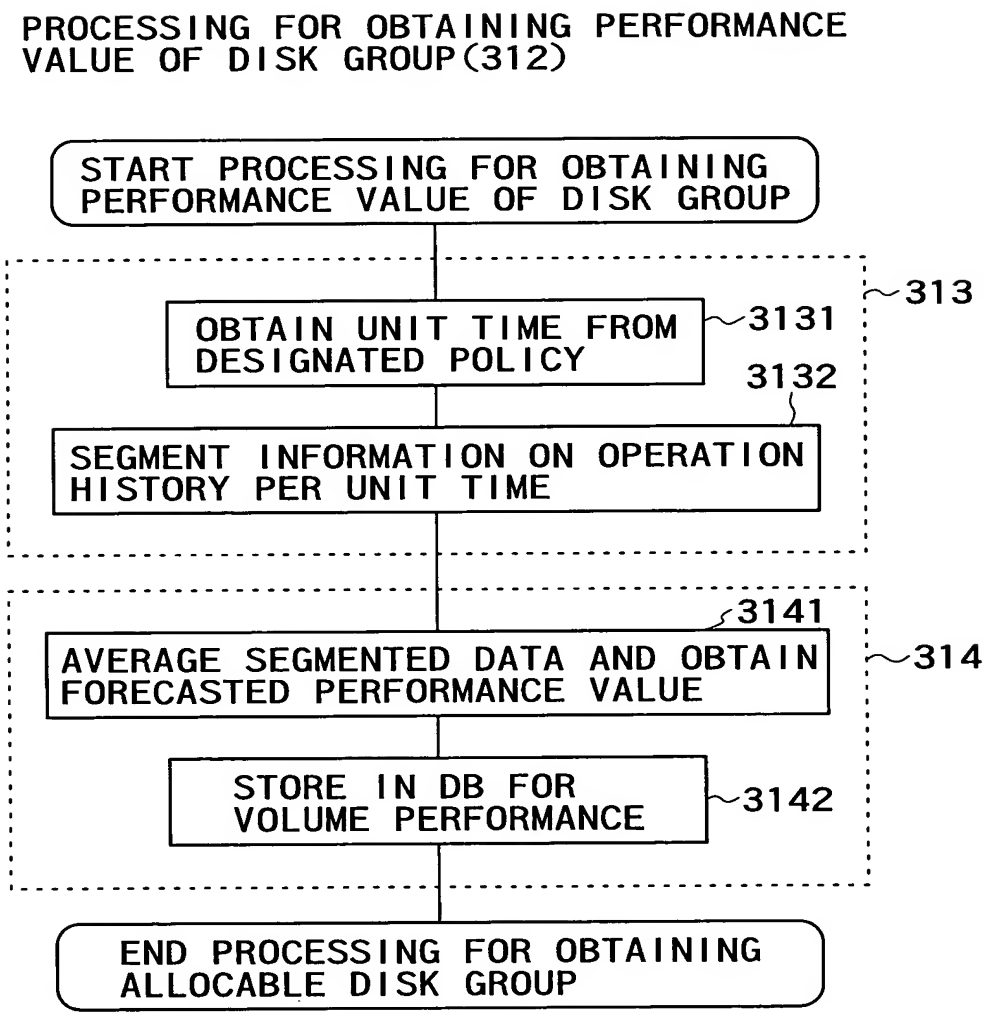

PROCESSING FOR OBTAINING PERFORMANCE VALUE OF DISK GROUP(312)
START PROCESSING FOR OBTAINING PERFORMANCE VALUE OF DISK GROUP
313
OBTAIN UNIT TIME FROM DESIGNATED POLICY
3131
3132
SEGMENT INFORMATION ON OPERATION HISTORY PER UNIT TIME
3141
AVERAGE SEGMENTED DATA AND OBTAIN FORECASTED PERFORMANCE VALUE
314
STORE IN DB FOR VOLUME PERFORMANCE
3142
END PROCESSING FOR OBTAINING ALLOCABLE DISK GROUP

FIG.6

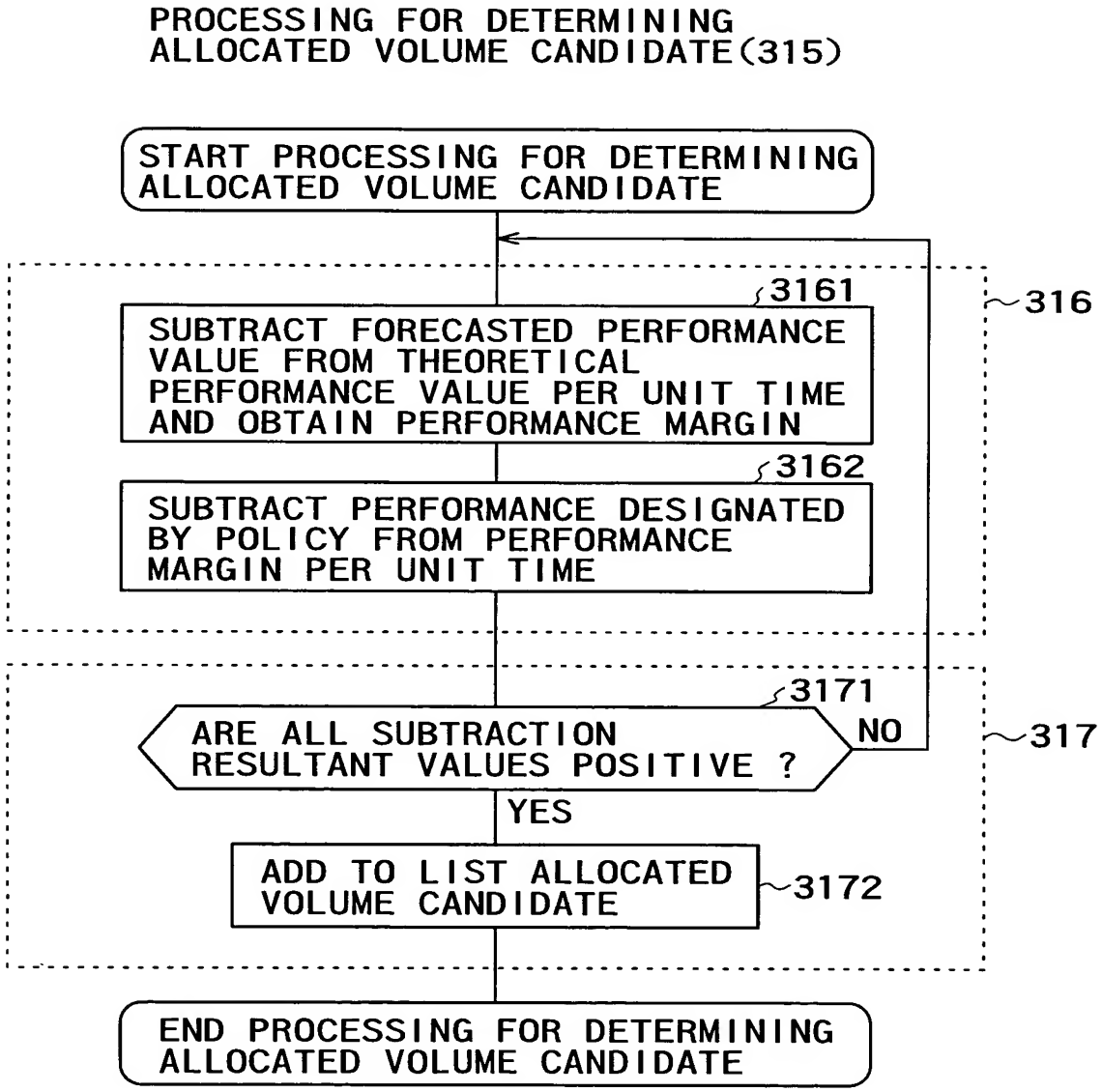
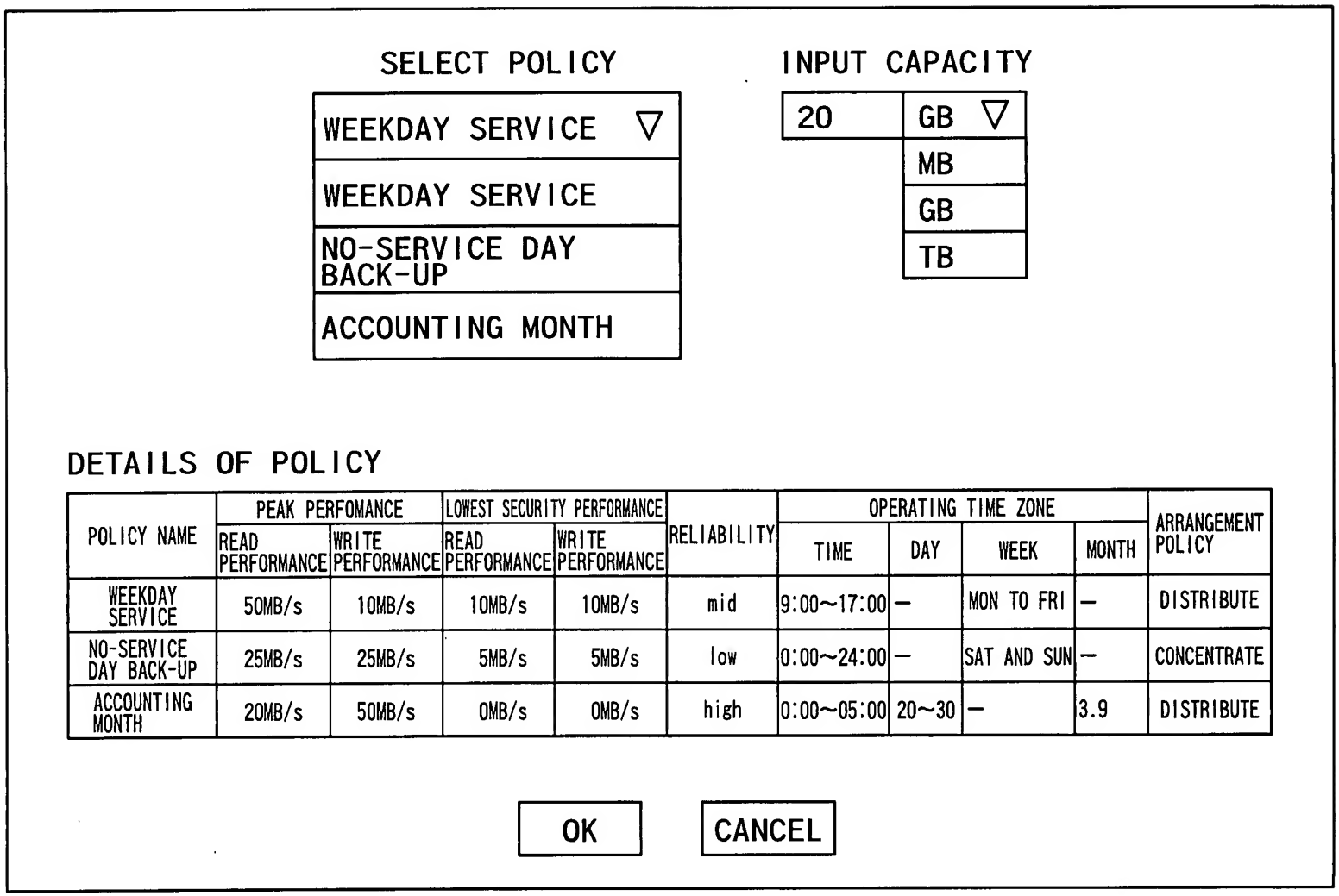

PROCESSING FOR DETERMINING ALLOCATED VOLUME CANDIDATE(315)
START PROCESSING FOR DETERMINING ALLOCATED VOLUME CANDIDATE
3161
SUBTRACT FORECASTED PERFORMANCE VALUE FROM THEORETICAL PERFORMANCE VALUE PER UNIT TIME AND OBTAIN PERFORMANCE MARGIN
3162
SUBTRACT PERFORMANCE DESIGNATED BY POLICY FROM PERFORMANCE MARGIN PER UNIT TIME
316
3171
ARE ALL SUBTRACTION RESULTANT VALUES POSITIVE ?
NO
317
YES
ADD TO LIST ALLOCATED VOLUME CANDIDATE
3172
END PROCESSING FOR DETERMINING ALLOCATED VOLUME CANDIDATE

FIG.7



POLICY NAME	PEAK PERFOMANCE		LOWEST SECURITY PERFORMANCE		RELIABILITY	OPERATING TIME ZONE				ARRANGEMENT POLICY
	READ PERFORMANCE	WRITE PERFORMANCE	READ PERFORMANCE	WRITE PERFORMANCE		TIME	DAY	WEEK	MONTH	
WEEKDAY SERVICE	50MB/s	10MB/s	10MB/s	10MB/s	mid	9:00~17:00	—	MON TO FRI	—	DISTRIBUTE
NO-SERVICE DAY BACK-UP	25MB/s	25MB/s	5MB/s	5MB/s	low	0:00~24:00	—	SAT AND SUN	—	CONCENTRATE
ACCOUNTING MONTH	20MB/s	50MB/s	0MB/s	0MB/s	high	0:00~05:00	20~30	—	3.9	DISTRIBUTE

FIG.8

PRESENTATION OF VOLUME CANDIDATE AND SELECTED SCREEN

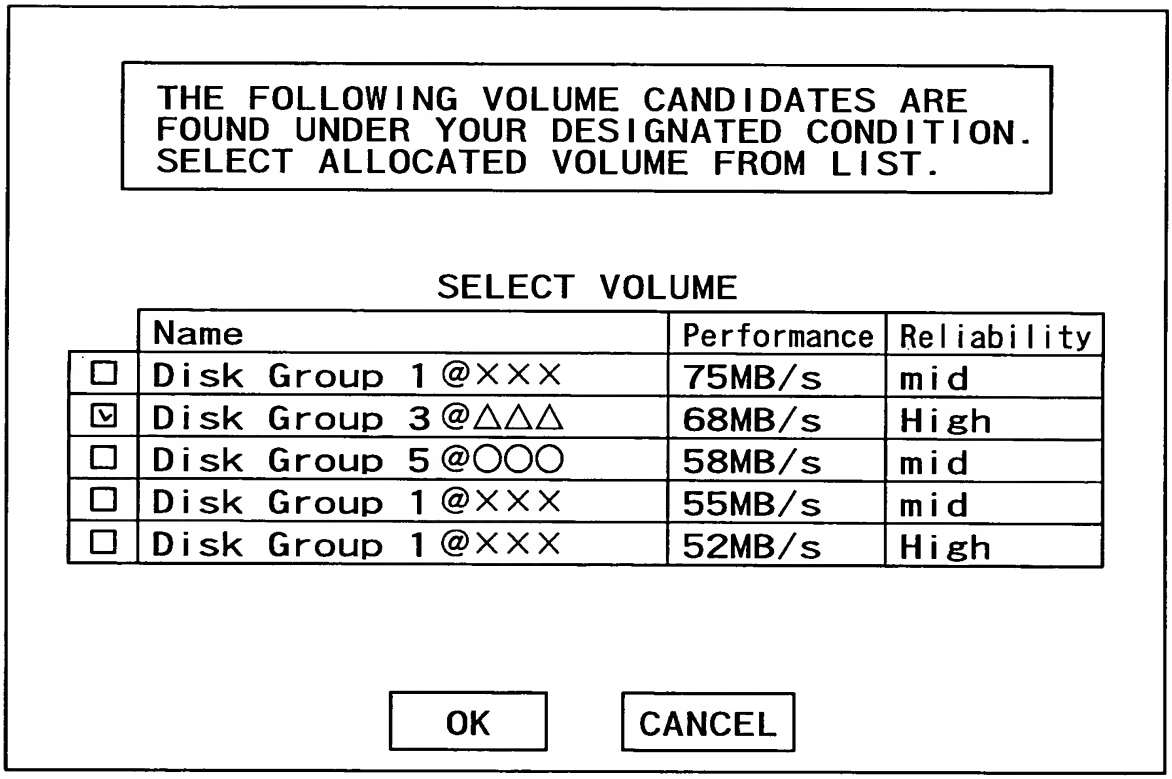
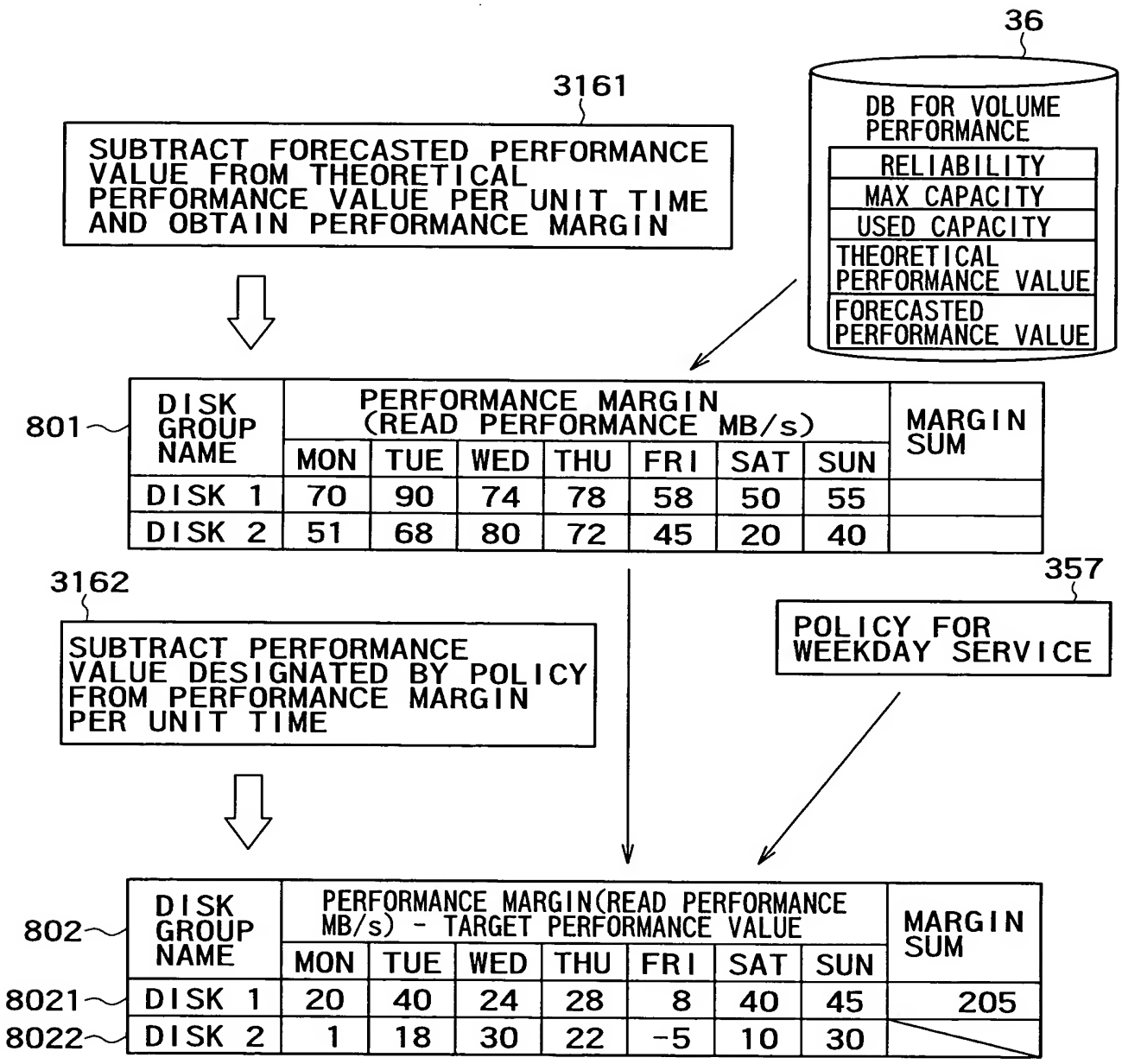


FIG.9

EXAMPLE OF CALCULATING PERFORMANCE MARGIN